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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10-053,104	01/24/2002	Hieronymus Andriessen	27500-78	1839

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EXAMINER

ANDERSON, MATTHEW A

ART UNIT PAPER NUMBER

1765

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/053,104

Applicant(s)

ANDRIESEN, HIERONYMUS

Examiner

Matthew A. Anderson

Art Unit

1765

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/24/2002
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Higgins et al. (US 5,879,715).

Higgins et al. discloses process and system for production of inorganic nano-particles. Precipitation occurs by ultra-filtration as per the abstract. In col. 5 lines 15-35 the dissolved metal salt may contain zinc and manganese. The dissolved precipitating agent or reactant may be selected from the group containing soluble hydroxides, carbonates, mineral acids, organic acids, sulfides, halides, boro-hydrides, chalcogenides, and combinations thereof. In col. 4 lines 33+ the mixed aqueous solutions are precipitated and subjected to an ultra-filtration. The solutions (i.e. microemulsions) are described as containing a surfactant in col. 6 lines 1-14. The surfactant was added to the dispersion of nano-precipitates which was then subject to ultrafiltration.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-6, 13-17, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al.(US 5,879,715) in view of Vacassy et al. (Surface Controlled Nanoscale Materials for High-Added-Value Applications. Symposium, Surface Controlled Materials for High-Added-Value Applications Symposium, Boston, MA, USA, 30 Nov.-3 Dec. 1997, Mater. Res. Soc. Warrendale, USA, 1998.).

Higgins et al. is described above.

Higgins et al. does not specifically suggest producing the chalcogenide ZnS.

Vacassy et el. specifies the use of the surfactant thioglycerol in the formation of nanoparticles of ZnS by precipitating cations and anions. Suggestion of Mn doping of the ZnS is also disclosed.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine the references because Higgins et al. suggests such precipitation and ultrafiltration process for chalcogenides and Vacassy et al. describes the precipitation process for a specific chalcogenide.

In respect to claims 2,3, 5-6, 13-14, 15-17, 19-22 it would have been obvious to one of ordinary skill in the art at the time of the present invention to form the Mn doped

chalcogenide ZnS by the precipitation/ultrafiltration process because Higgins et al. suggests its use for doped chalcogenides and Vacassy et al. precipitates the chalcogenide ZnS using the thioglycerol surfactant. Vacassy does not specify the method of removing the nanoparticles from the solution and Higgins et al. discloses one such method.

In respect to claim 4, 15 it would have been obvious to one of ordinary skill in the art at the time of the present invention to mix the required solutions because Higgins et al. discloses mixing of the solutions continuously in col. 6 lines 1-14.

5. Claims 7-11, 18, 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al. (US 5,879,715) in view of Vacassy et al. (Surface Controlled Nanoscale Materials for High-Added-Value Applications. Symposium, Surface Controlled Materials for High-Added-Value Applications Symposium, Boston, MA, USA, 30 Nov.-3 Dec. 1997, Mater. Res. Soc. Warrendale, USA, 1998.) and Lackowicz et al. (WO 00/46839).

Higgins et al. combined is described above.

Higgins et al. combined does not specifically suggest producing the chalcogenide with a polyphosphate surfactant.

Lackowicz et al. discloses aqueous solutions of CdS (a chalcogenide) with a polyphosphate stabilizer (i.e. surfactant).

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine the disclosures because polyphosphates were known to

be stabilizers for CdS in aqueous solutions and because Higgins et al. discloses the method working with the generic surfactant and chalcogenide. Motivation is found in the application of a known useful technique to known materials.

In respect to claim 7, it would have been obvious to one of ordinary skill in the art at the time of the present invention to use polyphosphate materials as the surfactant stabilizing the chalcogenides in solution because such was suggested by Lackowicz et al. in view of Higgins et al.'s generic teaching of a surfactant and chalcogenide.

In respect to claims 8, 18, 23 it would have been obvious to one of ordinary skill in the art at the time of the present invention to use a polyphosphate such as hexametaphosphate as the surfactant because Lakowicz et al. has suggested such a use and Higgins et al. discloses that the dispersion is formed by a generic surfactant.

In respect to claims 9-11, 24-26 it would have been obvious to one of ordinary skill in the art at the time of the present invention to form such a chalcogenide doped dispersion because the chalcogenide materials were known to Higgins et al. to form aqueous dispersions when combined with surfactants.

Allowable Subject Matter

6. The indicated allowability of claim 8 is withdrawn in view of the reference(s) to Lakowicz et al.. Rejections based on the reference(s) appear above.

Response to Arguments

7. Applicant's arguments, see page 14, filed 4/05/2004, with respect to the rejection(s) of claim(s) 7 under 35 USC 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Lakowicz et al as above.

8. The argument that the surfactants of Higgins et al. are not compounds capable of preventing agglomeration of the nanoparticles in solution is not convincing. Higgins et al. suggest that the surfactants form the solution and that it is forms non-agglomerated particle in that solution (col. 1 lines 1-40). The applicant has given no evidence that the surfactants of the references were incapable of forming the nanoparticle dispersions.

9. The argument that the surface active agents are known by differing terms is convincing although the effect of the surface active agent, regardless of its name at the time, in the solution was to form the dispersed solution. Vacassy et al. discloses ZnS-complexed solutions with the addition of thioglycerol.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Anderson whose telephone number is (571) 272-1459. The examiner can normally be reached on M-Th, 7-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAA
June 8, 2004

NADINE G. NORTON
SUPERVISORY PATENT EXAMINER

